

### **Abstract**

Disclosed is a system for evaluating the performance of cellular network handoff decisions. One embodiment of this system includes the steps of: creating a reference cellular network description; creating reduced geometric structures from the reference cellular network description; representing a general trajectory for a mobile unit in the reference cellular network description; approximating the general trajectory with a piecewise path having a multitude of handoff decision points; selecting a handoff mechanism; selecting handoff parameters; creating a discrete-time formulation characterizing handoff behaviors; and calculating at least one handoff performance metric. The handoff performance metrics may include assignment probabilities; handoff probabilities; a mean number of handoff value; a crossover point; and overall signaling load incurred by a handoff mechanism.